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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/761,893 | 01/17/2001 | Shih-Chieh Hung | 11709-003001 | 6011 |

26161 7590 07/15/2005

FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

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| EXAMINER |
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GARVEY, TARA L

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| ART UNIT | PAPER NUMBER |
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1636

DATE MAILED: 07/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/761,893

Applicant(s)

HUNG ET AL.

Examiner

Tara L Garvey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9-11,23 and 32 is/are pending in the application.
- 4a) Of the above claim(s) 12-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-11,23 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1, 3-7, 9-11, 23 and 32 are pending in this application.

Response to Arguments

Claim Rejections under 35 USC § 103

The rejection of claims 1, 3-7, 9-11 and 23 under 35 USC § 103 are withdrawn due to the applicants' amendment of the claims.

New Grounds of Rejection

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 32 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 32 recites the limitation of removing non-adherent cells by washing the upper plate of the culture device with a culture medium to the method of isolating mesenchymal stem cells in claim 1.

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The specification describes that non-adherent cells can be removed by changing the media. The specification does not describe "washing" the plate which can be using other buffers not encompassed by media. Thus, the limitation of washing in the newly added claim 32 constitutes new matter.

Claims 1, 3-7, 9-11, 23 and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 3-7, 9-11, 23 and 32 are drawn to a method of recovering mesenchymal stem cells (MSCs) from a mixture of cells using a culture device that contains a plate with pores that traps MSCs on the upper plate of the device while other cells pass through the porous plate and MSCs are recovered from the upper plate.

The specification describes a method of separating MSCs using a culture device that comprises a porous plate. The specification describes that MSC are large and will not pass through the pores in the plate resulting in adherence of the MSCs to the upper plate and that smaller cells such as hematopoietic cells will pass through the pores to the lower plate.

The specification does not describe a type of plate that allows only MSCs to not pass through and to adhere to the upper plate of the culture device. The specification does not describe why the separation by size does not result in additional cells

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remaining on the upper plate and adhering if a mixture of cells such as a bone marrow aspirate is applied to the device.

The prior art does not offset the lack of description in the specification in that it does not describe the properties of the porous plate of a culture device that selectively allows only MSCs to remain in the upper portion of the device and then to adhere to the upper plate.

There is not a structural and functional basis provided by the prior art or the specification for one of skill in the art to envision a plate that allows only MSCs to remain in and adhere to the upper portion of the culture device. Therefore, the applicant does not provide evidence of possession of a plate that would separate MSCs from a mixture of cells by allowing only MSCs to adhere to the upper plate of the culture device.

Claim 1, 3-7, 9-11, 23 and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Enablement is considered in view of the Wands factors (MPEP 2164.01(A)). These include: nature of the invention, breadth of the claims, guidance of the specification, the existence of working examples, state of the art, predictability of the art, relative skill in the art and the amount of experimentation necessary. All of the Wands

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factors have been considered with regard to the instant claim, with the most relevant discussed below.

Nature of the invention: The claims are directed to a method of isolating mesenchymal stem cells from a mixture of cells using a culture device comprised of a porous plate that allows mesenchymal stem cells (MSCs) to remain in the upper portion of the culture device and to then adhere to the upper plate of the device.

Breadth of the claim: The claim is broad in that it reads on porous plate made of any material with no definitive pore size.

Guidance in the specification/Existence of a working example: The specification describes a method of separating MSCs from a cell mixture using a culture device with a porous plate, which will allow MSCs to remain in the upper portion of the culture device and eventually adhere to the upper plate from which they can be collected. In addition the specification describes the porous plate will have a pore size range of 0.4 to 40 microns. The specification does not describe what material the plate should be made of to promote adherence of only MSCs. It also does not describe a specific pore size that will allow only MSCs to remain in the upper portion of the culture device since a range of 0.4 to 40 microns may allow many other cells besides MSCs to remain on the upper plate.

State of the art/Predictability of the art: The state of the art describes that describe that MSC have a large size (Van Vlasselaer et al , Blood, 1994, page 758, right column, first full paragraph bridging to page 759). The art does not describe a specific size or a size range that would encompass the size of mesenchymal stem cells. Thus,

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the art is unpredictable as to size pore would be sufficient to allow only mesenchymal stem cells to not pass through a porous plate; therefore, it is not predictable which cells will or will not pass through the pores in the upper plate.

Quantity of experimentation: A large amount of experimentation would be required to determine the size of the pores and the type of material for the upper plate of the culture device that would only allow MSCs to remain in and adhere to the upper portion of the culture device.

Conclusion: In order to practice the claimed invention, the skilled artisan would not have found sufficient guidance in the specification to make a culture device containing a porous plate with the proper material and pore size to select for only MSCs. The prior art did not compensate for the lack of guidance in the specification since the size of all MSCs has not been reported. The skilled artisan would have had to engage in a large amount of experimentation to make and use the claimed invention. In view of the lack of guidance in the specification and the large amount of experimentation in an unpredictable art, it would require undue experimentation to practice the claimed invention.

Conclusion

No claims are allowed.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tara L Garvey whose telephone number is (571) 272-2917. The examiner can normally be reached on Monday through Friday 9 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) (<http://pair-direct.uspto.gov>) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history


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information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Tara L Garvey
Examiner
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TLG



JAMES KETTER
PRIMARY EXAMINER